

CLAIMS

1. Francis runner which comprises a crown, a band and blades extending between said crown and said band, said blades defining liquid flow channels  
5 therebetween, characterized in that the ratio ( $e/L$ ) of the maximum thickness ( $e$ ) of each blade to the average developed length ( $L$ ) of its average fibre (23) is included between 0.1 and 0.2, and in that, at the level of the leading edge (21) of each blade, said average fibre is oriented, over essentially the entire height of the leading edge, along a straight line ( $\Delta_{23}$ ) forming an angle ( $\alpha$ ) greater than  $90^\circ$  in  
10 relation to the linear speed of advance ( $U$ ) of said leading edge in the direction of rotation of the runner.
2. Runner according to Claim 1, characterized in that said ratio ( $e/L$ ) is greater than 0.13, preferably than 0.15.
3. Runner according to one of the preceding Claims, characterized in that the  
15 average angle ( $\alpha$ ) between the linear speed of advance ( $U$ ) of a blade (2) at the level of its leading edge (21) and the average fibre (23) of said blade at the level of said leading edge is included between  $110^\circ$  and  $140^\circ$ .
4. Runner according to one of the preceding Claims, characterized in that each blade (2) is formed by a skin (26) constituting the two lateral faces (24, 25)  
20 of said blade and defining a hollow internal volume ( $V_2$ ) of said blade.
5. Runner according to Claim 4, characterized in that said skin (26) is metallic.
6. Runner according to Claim 4, characterized in that said skin (26) is made of composite material.

7. Runner according to one of Claims 4 to 6, characterized in that said skin (26) is formed by assembling ( $27_1$ ,  $27_2$ ) two plates ( $26_1$ ,  $26_2$ ) respectively constituting the pressure side surface (24) and the suction side surface (25) of said blade (2).
- 5 8. Runner according to one of Claims 4 to 7, characterized in that said volume ( $V_2$ ) is lined with a filling material (28).
9. Francis hydraulic turbine equipped with a runner (1) according to one of the preceding Claims.